

REMARKS

Claims 1-46 remain in the application. Independent Claims 1 and 24 are amended to emphasize distinctions of Applicants' invention over cited art. Claims 15 and 19 are amended to be consistent with Claim 1 as amended, while Claims 38 and 42 are amended to be consistent with Claim 24 as amended.

The specification is amended as follows. Paragraph 0012 is amended to emphasize black-to-color bleed **control** against color inks; see, e.g., paragraph 0018. Paragraph 0018 is amended by inserting "concentration", which was inadvertently omitted from the text.

Regarding the stricken references, Applicants agree with the Examiner's action.

Claims 21 and 44 are rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, the Examiner contends that the phrase "and derivatives thereof" renders the scope of the claims confusing because "it is not clear what is meant by 'derivatives' or what types of organic acids are encompassed by this phrase.

First, Applicants list a number of organic acids: polyacrylic, acetic, glycolic, malonic, malic, maleic, ascorbic, succinic, glutaric, fumaric, citric, tartaric, lactic, sulfonic, and ortho-phosphoric acid. One skilled in the inkjet ink art would clearly know what derivatives of these organic acids would be useful in inkjet inks.

Second, without the phrase "and derivatives thereof", infringers could infringe the claim with impunity, based on Applicants' own teachings, by simply adding a functional group to one of the enumerated organic acids that has no effect on the overall behavior of the organic acid. However, Applicants are open to suggested claim language to preserve their rights that meets the Examiner's objection.

Applicants note with interest that Parazak, cited by the Examiner herein, issued with the phrase "derivatives thereof" with regard to the organic acids.

Reconsideration of the rejection of Claims 21 and 44 under 35 USC 112, second paragraph, is respectfully requested.

The Examiner's assumption as to the common ownership of the subject matter of the various claims is correct.

Claims 1-46 are rejected under 35 USC 103(a) as being unpatentable over Prazak (U.S. Patent 6,281,267) in view of Zhu (U.S. Patent 5,889,083).

Parazak, cited by Applicants in their Information Disclosure Statement filed with the application, discloses ink to ink bleed and halo control using specific polymers in ink-jet printing inks. The ink set comprises at least two inks, one of which contains a pH sensitive polymer, and, preferably, a self-dispersing colorant. A second ink is provided which comprises incompatible inorganic or organic salts or which has an appropriate pH. The polymer precipitates onto a medium upon contact with the second ink, thereby providing improved bleed and halo control.

Zhu discloses aqueous ink jet compositions, purportedly suitable for printing scratch and rub resistant identifying marks on substrates such as paper, glass, metal, or plastic substrates comprising water, a colorant, a binder resin, and a wax. An example of a colorant is carbon black. An example of the binder resin is a styrene-acrylic copolymer. An example of a suitable wax is a polyethylene or a polytetrafluoroethylene wax. The ink jet composition may further contain organic solvents, defoamers, conductivity agents, and biocides.

Applicants' invention is directed to the control/prevention of black-to-color bleed (as defined in paragraph 0003 of the specification). Independent Claims 1 and 24 are amended to emphasize this aspect. For example, Claim 1 is amended as follows:

1. A pigment-based inkjet ink set comprising a black ink and at least one color ink, said black ink including at least one black pigment, at least one cosolvent, water, optionally at least one water-soluble surfactant/amphiphile, and a polymer, wherein said polymer comprises a hydrolyzed form of styrene-maleic anhydride copolymer **and wherein said at least one color ink includes a component selected from the group consisting of multivalent salts and organic acids that interacts with said polymer to control black-to-color bleed.**

(Emphasis added.) Claim 24 is similarly amended.

The Examiner argues that Parazak discloses the essential features of Applicants' claimed invention, but for the requirement of hydrolyzed styrene-maleic anhydride copolymer (SMAH). The Examiner argues that Zhu teaches the use of SMAH

copolymer as a binder in order to fix the colorant of the ink to the substrate and to provide abrasion protection.

Parazak uses a pigmented black and color ink as do Applicants, but the similarity ends there. The black ink in Parazak's system contains an acrylate polymer, while the black ink in Applicants' system contains SMAH. Given Zhu, the question is why would one be directed to trying SMAH in a Parazak-type of system when Zhu is using the material for abrasion resistance and no mention is ever made of black to color bleed. Zhu is not even looking at an ink set that contains a black ink and a color ink. In fact, Zhu's invention is just not the use of SMAH in the ink but the combination of SMAH **and** a wax in the ink to address abrasion. Nowhere does Zhu mention or even remotely suggest that the addition of SMAH to an ink could have additional benefits such as bleed control. The structures of SMAH of Zhu and the acrylates cited in Parazak are very different, so there is no logical reason to substitute one for the other, other than that both are compatible with aqueous systems and one might begin trying water soluble polymers in an effort to address the problem. However, the test is not "obvious to try". The same is true of Parazak.

Finally, while Zhu discloses black and color inks, there is no disclosure of ink-jet ink **sets**, as claimed by Applicants. That is to say, there is not the slightest disclosure or suggestion of the effects of printing a black ink adjacent a color ink.

The Examiner cites as the motivation to use SMAH the fact that the polymer is used as a binder by Zhu to fix the colorant of the ink to the substrate and to provide abrasion protection. However, fixing the colorant to the substrate in no way is suggestive of controlling black to color bleed. One skilled in the art, seeking to improve control of black to color bleed would hardly consult Zhu for a solution to this problem.

It appears that the Examiner has found a reference in the inkjet art that employs SMAH and is trying to justify his position. However, first, the Examiner is extracting bits and pieces from a reference (Zhu) to cobble together a facsimile of Applicants' claims, where Zhu is totally silent on black to color bleed. Contrary to the Examiner's assertion, there is, in fact, no motivation on the part of the artisan to employ the teachings of Zhu to improve control of black to color bleed.

It further appears that the Examiner is confusing fixing a colorant to a substrate with controlling black to color bleed. These are simply two quite disparate

problems, and a solution to one problem is in no way suggestive of a solution to the other problem.


Reconsideration of the rejection of Claims 1-46, as amended, under 35 USC 103(a) as being unpatentable over Prazak in view of Zhu is respectfully requested.

The Examiner cites Yamashita et al, Yanagi et al, O'Neill et al, Higashiyama et al, Fukioka et al, Lee et al, Kabalnov, and Murakami et al as being pertinent to Applicants' disclosure. Applicants have reviewed these references and consider that they fail to disclose or suggest Applicants' invention as claimed, whether taken alone, or taken in any reasonable combination with each other, or taken in any reasonable combination with the references discussed above.

The foregoing amendments and arguments are submitted to place the application in condition for allowance. The Examiner is respectfully requested to take such action. If the Examiner has any questions, he is invited to contact the undersigned at the below-listed telephone number. HOWEVER, ALL WRITTEN COMMUNICATIONS SHOULD CONTINUE TO BE DIRECTED TO: IP ADMINISTRATION, LEGAL DEPARTMENT, M/S 35, HEWLETT-PACKARD COMPANY, P.O. BOX 272400, FORT COLLINS, CO 80527-2400.

Respectfully submitted,

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